

- ⁵⁷ Susser M, Susser E. Choosing a future for epidemiology: II. from black boxes to Chinese boxes and eco-epidemiology. *Am J Public Health* 1996;**86**:674–77.
- ⁵⁸ McMichael AJ. Prisoners of the proximate: loosening the constraints on epidemiology in an age of change. *Am J Epidemiol* 1999;**149**:887–97.
- ⁵⁹ Berkman L, Kawachi I (eds). *Social Epidemiology*. Oxford: Oxford University Press, 2000.
- ⁶⁰ Wilkinson R, Marmot M (eds). *Social Determinants of Health: The Solid Facts*, 2nd edn. Oxford: Oxford University Press, 2006.
- ⁶¹ Navarro V, Muntaner C (eds). *Political and Economic Determinants of Population Health and Well-Being: Controversies and Developments*. Amityville, NY: Baywood Pub. Co., 2004.
- ⁶² Morris JN, Wilkinson P, Dangour AD, Deeming C, Fletcher A. Defining a minimum income for health living (MIHL): older age, England. *Int J Epidemiol* 2007;**36**:1300–07.

The online version of this article has been published under an open access model. Users are entitled to use, reproduce, disseminate, or display the open access version of this article for non-commercial purposes provided that: the original authorship is properly and fully attributed; the Journal and Oxford University Press are attributed as the original place of publication with the correct citation details given; if an article is subsequently reproduced or disseminated not in its entirety but only in part or as a derivative work this must be clearly indicated. For commercial re-use, please contact journals.permissions@oxfordjournals.org
 Published by Oxford University Press on behalf of the International Epidemiological Association *International Journal of Epidemiology* 2007;**36**:1180–1184
 © The Author 2007; all rights reserved. doi:10.1093/ije/dym229

Calculating health and social change: an essay on Jerry Morris and *Late-modernist* epidemiology

Dorothy Porter

Accepted 3 September 2007

The 50 years since Jerry Morris published his seminal work on *Uses of Epidemiology* in 1957¹ have witnessed significant transformations in and for the discipline of epidemiology. Not only have there been internal intellectual changes but significant transformations have also taken place in the external relations of the discipline. That is, the relationship of the discipline to the social and political environments of health that it dissects, constructs and is constructed by. Morris's foundational book, and the essay bearing the same name he published in the *British Medical Journal* 2 years earlier,² created a platform for the discipline that linked epidemiological knowledge and the rational values on which it was based overtly to its function in the social reform of health.³ Values and functions were integrated by Morris in the deconstruction of the 'burden of disease'; the use of population analysis as an aetiological method; in providing evidence on which to base clinical decision making; and in the analysis of needs in relation to the structure of public health and medical services provision. (The seven uses of epidemiology were identified by Morris as: demonstrating historical change; community diagnosis; identifying risks to individuals; analysis health service provision and needs; completing the clinical picture of disease; identification of syndromes; and discovering causes through observation of populations. Morris JN, *The Uses of Epidemiology*

(London: Livingstone, 1957); Morris JN, The uses of epidemiology, *Br Med J* 1955; 395–401.)

Morris' vision anticipated the major developments that would occur within and be critically linked to the discipline over the next five decades, such as the establishment of evidence-based clinical medicine.⁴ What I examine in this essay is how that vision signalled the emergence of a *late-modernist* epidemiological paradigm in Britain in the 1950s. The philosopher of science, Ian Hacking, identified the institutionalization of probabilistic thought not only within the modern disciplines of the natural sciences in the 19th century, but also in the social and political management of industrial societies as a definitional characteristic of cultural modernism.⁵ His analysis defined cultural modernism as the establishment of the social authority of statistical reasoning from the early 19th century. He also argued that this authority was dependent upon a positivist model of scientific reasoning in industrial societies—a legacy of Enlightenment rationalism. In this essay, I am in agreement with Hacking and with the medical anthropologist Vincanssne Adams that the institutionalization of the legitimate/political authority of positivist social statistics in health management in industrial societies is one of the defining characteristic of cultural modernism.⁶ I would also argue that the process that Hacking specifically discusses is the emergence of statistical-cultural modernism in the first stages of industrialization.

In earlier work, I have argued that a generation of intellectuals engaged in the creation of social medicine as an academic discipline in Britain after the Second World War were bound to their project through ‘political positivism’, which was a belief in the reciprocity between positivist science and socialism.⁷ Here I draw upon that work to argue further that one vital expression of political positivism for this group was a *late-modernist* model of epidemiology. *Late-modernist* epidemiology is such, I would argue, because it applies the principle values of statistical modernism outlined by Hacking to the analysis of health in *late-industrial capitalism*. It is the relationship between epidemiology and health in late industrial capitalism that Morris encapsulates in his articulation of a new paradigmatic programme of ‘uses’.¹

The epistemological goals that Morris outlines in his account of *Uses of Epidemiology* are inherently bound to a political vision of a positivist rationalistic management of health and disease in society. The conceptualization of society driving Morris’ model—which he shared with his peers—is late industrial societies, which were perceived at that time to be in the process of transition towards technologically automated modes of production. Morris’s paradigm embraces the conceptualization of this transition contained in sociological theory in the 1950s–60s. In the post-Second World War period, late industrial capitalism was represented in new theories of large-scale social systems as being the process of transition toward technologically automated societies in which the class structures produced by labour-intensive industrialization were being eroded. I will argue below that this conceptualization of the structure of late-industrial capitalist societies was established above all by the dominant figure of sociological theory in this period, Talcott Parsons.

It is my argument that the *late-modernist* paradigm of epidemiology expressed in Morris’s seminal work in the 1950s embraced the post-war sociological view of social stratification that characterized late industrial capitalism and that this had significant ideological implications for the discipline. The central focus of *late-modernist* epidemiology was what Morris referred to as ‘modern epidemics’.¹ That is, chronic diseases resulting from an epidemiological transition brought about by the mid-20th century through the public health control of infectious diseases in industrialized societies from the late-19th century. I will explore Morris’ *Br Med J* article that is reproduced here to commemorate the 1957 volume, and the volume itself in order to argue that Morris’s seven *Uses*¹ inter-linked scientific and political goals in a way that reflected a thoroughly *late-modernist* view of the structures and processes of post-Second World War society.

Needs and structures

Much has already been made of the way in which Morris bound the study of aetiology through population analysis to the study of the disparity between needs and the structure of public health care and medical services.³ As Stephen Frankel has pointed out this was a needs-driven epidemiology of ‘indications’ that starts with the level of population that could benefit from services rather than the number of people with a particular condition.⁸ Morris’s epidemiology of needs chimed with

the political focus on poverty that characterized the original analytical framework of Morris’ other disciplinary identity, social medicine.⁹ Analysing the relationship between socio-economic inequality and differential distribution of health and disease was a foundational agenda of Morris’s peers in social medicine, including of course his close collaborator and founder of post-war theories of the welfare state, Richard Titmuss.¹⁰

The other value which this group shared was a belief in the analytical power of quantitative methods and the potential political power of epidemiological research to influence policy making and thereby social change. Thus for this generation of peers, social medicine and a needs-driven epidemiology were more or less inter-changeable descriptions of the quantitative, population-based scientific investigation of disease, health and socio-economic inequality aimed at instituting social change. It is this connection of quantitative empirical analysis to the institutionalization of social change that I have elsewhere referred to as the ‘political positivism’ of Britain’s first generation of social medicine academics.⁷ The epidemiological link between inequality and disease causation supplied social medicine with its scientific authority.

The *British Journal of Social Medicine* was founded and edited by the geneticist Francis Crew and the quantitative biologist Lancelot Hogben in 1947 and was dedicated to analysing the ‘numerical, structural and functional changes of human populations in their biological and medical aspects’.¹¹ The editors suggested that the methods of social medicine ‘must necessarily be statistical, involving the use of numerical data obtained either from official sources or from special field investigations, and interpreted in the light of established findings of the laboratory and of the clinic’.¹¹ This was equally central to the agenda for institutionalizing social medicine of Morris’s contemporary, Thomas McKeown. McKeown succeeded Crew and Hogben as editor of the *British Journal of Social Medicine*, became the longest standing professor of social medicine in Britain and a dominating figure within the discipline. McKeown shared, with Crew and Hogben, a belief in the emancipatory power of positivist science and socialist politics. Like Crew and Hogben he remained wedded to a faith in the force of quantitative explanations, for example, in his historical-demographic argument that aimed to discredit the triumphalist myths of clinical medicine.¹²

Morris’s uses for epidemiology reflected the hegemonic impetus of political positivism that characterized the academic worlds of social medicine and needs-driven epidemiology in this post-war period. In his 1955 *Br Med J* article, he suggested that the analysis of therapeutic impact of insulin upon diabetes distribution revealed that ‘social classes I and II did much better than for classes IV and V’. Therefore, he asks, ‘How are the benefits of anti-coagulants being distributed today or of the new cardiac surgery’.² However, by the time of writing this, Morris was moving beyond a conceptualization of social inequality based on social class and was looking toward a more sociologically discriminating conceptualization of social stratification: ‘Differences are, I fancy, more likely to be regional and local than related to “social class”?’ A dynamic science of epidemiology analysed changing people in a changing society revealing ‘What are the *social* changes that underlie the *biological* changes expressed?’¹ (Morris’s emphasis). Morris

believed that a sociologically astute stratification of need could be the instrument that would revolutionize clinical perceptions of disease causation, health and therapeutic needs and service provision: 'In how many other examples of medical, obstetric or dental care would *community* comparisons stimulate fresh *clinical thinking*' (Morris's emphasis).¹

At the same time as Morris was developing these insights, a major shift was taking place within post-war sociological theories of advanced industrial societies that substituted a Weberian model of social stratification for earlier Marxist driven class analyses of social structure.¹³ This conceptual shift was exemplified above all in the sociological theory of the Harvard sociologist who dominated the discipline for at least three decades after the war, Talcott Parsons.¹⁴ In embracing a fundamentally Parsonian conceptualization of social stratification Morris encapsulated the emergent *late-modernist* paradigm of epidemiology. 'What of the changing class structure today, of the new prosperity? It is only recently that Simon's dictum of 1890 has lost its force: "...how far the poor can be made less poor...".¹ For Morris one of the 'characteristic modern changes' was that 'The "new" diseases show little of the concentration among the poor that was so common in the "old"'.¹

The full implications of this paradigm went beyond substituting community for class in determining the social structure of health differentials. I argue below that the *late-modernist* paradigm of epidemiology also embraced post-war theoretical assumptions about the *embourgeoisement* of technologically automated industrial societies dominated by middle-class structures and values universalized in mass cultures.¹⁵ The decreasing epidemiological significance of social class in Morris's population science allowed the deconstruction of the complexity of the social and biological relations of chronic diseases through the identification of 'ways of living'² as their primary cause. In deconstructing ways of living, *late-modernist* epidemiology was able to offer the opportunity to prevent illness by changing social and individual behaviour.

The biggest promise of this method lies in relating diseases to the *ways of living* (Morris's emphasis) of different groups, and by doing so to unravel 'causes' of disease about which it is possible to do something.

The chances of a healthy life

Morris' calculus of individual risk from the identification of causes through the observation of populations echoed the methodologies developed by Interwar commercial life-insurance actuarial analysis for determining the chances of a healthy life. This is not surprising given his close collaboration with Richard Titmuss who first learned his craft working for the Insurance industry.¹⁰ But I would argue that more is at stake here than simply mathematical modelling, such as was the case in the influence of R.A. Fisher's work upon the development of randomization by Austin Bradford Hill.¹⁶ Rather, it is the changing values about health and individual responsibility which were transmitted through this rational association.

Morris emphasized the necessity of a multiple causal analysis of chronic diseases if causation is to be utilized for prevention.

He was highly skeptical of the unilinear logic of bacteriological aetiology even applied to infectious diseases. For example, identifying *Trepona pallidum* was not a sufficient or useful explanation of the cause of syphilis when prevention depended as much upon the influences of 'race, of sex, of age, and such causes as the psychology of promiscuity, the economics of prostitution, the life of the merchant seaman, the horrors of war, the denial of family life in contract migrant labour, causes which in one combination or another may produce a case of syphilis'.¹ Biological causes, such as hereditary disposition, and sociological causes needed to be included in multi-variable analysis to crack the puzzle of modern epidemics. But Morris placed 'ways of life' at the centre of the causal analysis of what were perceived at the time as the dominant chronic diseases of coronary heart disease, lung cancer and obesity.¹

Morris drew upon what he called 'the famous analysis from the "Metropolitan Life" on the dangers of "overweight"',² to illustrate 'the first turning of the ground to highly advanced observations'. In the 1920s, statisticians working within the life-insurance industry in the United States had begun to examine the relationships between lifestyle, overweight, morbidity and mortality. Louis Israel Dublin produced surveys on overweight and mortality for the Metropolitan Life Insurance Company in 1924 and 1929 and completed surveys on lifestyle and chronic disabling diseases, including asthma and heart disease with Herbert H. Marks in the 1940s.¹⁷⁻²¹ At the end of the war, the US Public Health Service initiated new studies of the impact of the epidemiological transition upon chronic diseases when Joseph Mountain hired Gilcin Meadors in 1946 to find what eventually became the Framingham study of heart disease in 1947.²² Meadors set up the initial study with the express purpose of producing 'recommendations for the modification of personal habits and environment' that could prevent the development of CHD.²²

While the Framingham study highlighted the role of diet and cholesterol, by the early 1950s, in Britain, Morris and his colleagues at the MRC Social Medicine Unit were highlighting another lifestyle determinant of CHD, exercise.²³ For Morris, this study was an example of how 'ways of living' as general factors could be studied as specific variables in the causation of specific diseases and thus could contribute to understanding the health chances of the individual.

Building upon 'the method of the *life table*, the basis of the actuary's work'¹ aetiological calculation of 'major aspects of behaviour.... ways of life, mass habits and social customs'² placed individuals at the heart of *late-modernist* epidemiological analysis and preventive medicine. In the 'epidemiology of personal habits', such as smoking, physical activity, psychological states, sexual behaviour, differences between individuals cut across social classes, occupations and regions. The studies Morris and his peers were undertaking on exercise, smoking and diet illustrated that 'individual variability within the group will matter more'.¹ And as Morris pointed out the epidemiological significance of personal habits had profound consequences for public health. That was 'the new sanitary idea, that prevention of disease in the future is likely to be increasingly a matter of individual action and personal responsibility'.¹ This contrasted dramatically with Public Health of an earlier era where 'the community did things for the individual'.¹ What

might have appeared as a 'new sanitary idea' to Morris and his peers in the 1950s, however, would have been old news to the commercial life-insurance industry.

Epidemiological modernism and the new public health

The many interviews, radio broadcasts and publications given and written by Morris during his long career have allowed historians to document his role in the promotion of a new public health grounded in prevention of chronic diseases through the reform of individual lifestyles.^{24,25} I have previously documented the complex relationship of Morris's allied academic discipline, social medicine, to the rise of lifestyle preventive medicine.^{7,26} But here I have tried to push the historical interrogation of the rise of lifestyle medicine to another level of analysis by probing the political and intellectual ecology of that transformation. Elsewhere, I have begun this task by looking at the influence of post-war sociology of class culture upon the rise of the 'biopsychosocial'^{27,28} model of disease.^{29,30} The biopsychosocial model of disease and disease prevention took on an intense centrality specifically in Anglo-US models of public health in the late-20th century, in contrast to structural models of social medicine, for example, in Latin America.³¹ What Morris' manifesto for epidemiology in the late-1950s reveals, however, is the hegemonic rationale for some of these developments.

While placing the disease risks of personal habits to the chances for a healthy life at the centre of the 'new sanitary idea' late-modernist epidemiology and the political positivism on which it was based did not represent a conservative philosophy in its own epoch. Rather, it reflected the adjustments of a social democratic political philosophy of health to anticipated post-industrial, technologically automated societies. What I have called the late-modernist model of epidemiology articulated by Morris synthesized the intellectual modernism of the post-war social sciences with congruent insights offered in commercial actuarial accounts of health and disease risk of the pre-war era. Late-modernist epidemiology did so, however, with the goal of furthering the establishment of social, economic and health egalitarianism by using the latest intellectual tools at its disposal. One measure of success in this endeavour would be, Morris argued, to 'abolish the clinical picture'¹ (Morris's emphasis) of disease. He and his peers believed that this was a primary social need of his day and was society's best shot at reducing the burden of the metabolic, malignant and degenerative diseases that characterized late industrial societies.

Acknowledgements

I would like to thank John Tercier, Brian Dolan and Vincanne Adams for their extremely insightful comments and discussions on this article.

Conflict of interest: None declared.

References

- Morris JN. *Uses of Epidemiology*. Edinburgh and London: E & S Livingstone, 1957.
- Morris JN. Uses of epidemiology. *Br Med J* 1955;395:401. Reprinted *Int J Epidemiol* 2007;36:1165-72.
- Davey Smith G. The uses of 'Uses of Epidemiology'. *Int J Epidemiol* 2001;30:1146-55.
- Kristiansen I, Mooney G. *Evidence-Based Medicine: in its Place*. London: Routledge, 2006.
- Hacking I. *The Taming of Chance*. Cambridge: Cambridge University Press, 1990.
- Adams V. Saving Tibet? an inquiry into modernity, lies, truths, and beliefs. *Med Anthropol* 2005;24:71-110.
- Porter D. The decline of social medicine in Britain in the 1960s. In: Porter D (ed.). *Social Medicine and Medical Sociology in the Twentieth Century*. Amsterdam and Atlanta: Rodopi, 1997. pp. 97-121.
- Frankel S. The epidemiology of indications. *J Int Epidemiol Commun Health* 1991;45:257-59.
- Porter D. John Ryle doctor of revolution. In: Porter D, Roy P (eds). *Doctors, Politics and Society: Historical Essays*. Amsterdam and Atlanta: Rodopi, 1993. pp. 229-47.
- Oakley A. Making medicine social: the case of the two dogs with bent legs. In: Porter D (ed.). *Social Medicine and Medical Sociology in the Twentieth Century*. Amsterdam and Atlanta: Rodopi, 1997. pp. 81-96.
- Crew FAE, Lancelot H. eds. Notice to contributors. *Br J Soc Prev Med* 1947;1.
- McKeown T. *The Role of Medicine: Dream, Mirage or Nemesis*. London: Nuffield Provincials Hospital Trust, 1976; *The Modern Rise of Population*. London: Edward Arnold, 1976.
- Barber B. In: Robert K. Merton (ed.). *Social Stratification: A Comparative Analysis of Process and Structure*. New York: Harcourt Brace, 1957.
- Parsons T. (ed), *The Principle Structures of Community: A Sociological View*. (New York: Liberal Arts Press, 1959); *The Social System*. (Glencoe, Ill: Free Press, 1951); *Structure and Process in Modern Societies*. (Glencoe, Ill: Free Press, 1960).
- Kornhauser W. *The Politics of Mass Society*. (Glencoe, Ill: Free Press, 1959); Bell D., *Modernity and mass society: On the Variety of Cultural Experience*. In: Schlossberg E (ed.). *Good News*. (1969); Brubaker Dale L (ed.). *Studies in Mass Society*. (Scranton: International Textbook Inc., 1969).
- Doll R. Austin Bradford Hill and the progress of medical science. *Br Med J* 1992;305:26.
- Dublin LI. *Mortality of Overweight According to Spine Length*. Presented for the Committee at the Annual Meeting of the Association of Life Insurance Medical Directors at Newark, New Jersey October 23, 1924. New York: Committee on Dryer Measurements in relation to Life Insurance Underwriting Practice, Report No. 2, 1924.
- Dublin LI. *The Relation Between Overweight and Cancer: A Preliminary Examination of Evidence from Insurance Statistics*. Proceedings of the Association of Life Insurance Medical Directors of America, Vol. 15, 1929. (New York: Association of Life Insurance Medical Directors of America, 1929).
- Dublin LI, Marks HH. *Mortality Risks with Asthma*. Read at the Forty-fourth Annual Meeting of the Association of Life Insurance Medical Directors of America, October, 1933. New York: Press of Recording and Statistical Corporation, 1934.
- Dublin LI. (ed.). The American people: studies in population. *Ann Am Acad Pol Soc Sci* 1936;188.
- Dublin LI, Marks HH. Mortality Amongst Insured Overweights in Recent Years. Read at the Sixtieth. (New York: The Association of Life Insurance Medical Directors of America, 1952).

- ²² Oppenheimer G. Becoming the Framingham Study 1947–1950. *Am J Public Health* 2005;**95**:602–10.
- ²³ Morris JN *et al.* Coronary heart-disease and physical activity of work. *Lancet* 1953;**257**:1053–57.
- ²⁴ Berridge V, Morris JN. *Int J Epidemiol* 2001;**30**:1141–45.
- ²⁵ Murphy S. The early days of the MRC social medicine research unit. *Soc Hist Med* 1999;**12**:389–406.
- ²⁶ Porter D. The social contract of health in the twentieth and twenty first centuries. In: Susan GS, Patrick Z, Lion M (eds). *Health and Space in the Twentieth Century*. London: Palgrave MacMillan, 2007 (forthcoming).
- ²⁷ Engel G. The need for a new medical model: a challenge for biomedicine. *Science* 1977;**196**:129–36.
- ²⁸ Brown T. The growth of George Engel's biopsychosocial model. Free Associations. <http://human-nature.com/free-associations/engel1.html>.
- ²⁹ Porter D. From social structure to social behavior: social medicine and class culture in Britain after the Second World War. *Contemp Br Hist* 2002;**16**:58–80.
- ³⁰ Porter D. Class structure and culture in social medicine in post-war Britain. *J Epidemiol Community Health* (commissioned by the editor), March 22, 2007.
- ³¹ Porter D. How did social medicine evolve, and where is it heading? *PLoS Med* 2006;**1667**–72.

Fifty years of JN Morris's *Uses of Epidemiology*

Ann Oakley

Accepted 3 September 2007

Much that health researchers take for granted today has a recent intellectual history. Despite the incursions of people such as William Farr and John Snow into the murky provenance of vital statistics, the promise of ecological studies of disease, clinical medicine and the infant study of health and illness in their social context were firmly divided occupations until the 1940s in Britain. Doctors practiced medicine, and other people (social workers? sociologists? socialists?—anything with a 'soc' in it) dabbled in the much softer business of relating the behaviour of human bodies to their social environments. The emerging art of social medicine, later, medical sociology and, later still, the sociology of health and illness, depended heavily on another cinderella discipline—that of epidemiology.

In his classic *Uses of Epidemiology*, first published in 1957, Jerry Morris set out to demonstrate to those working in the health professions how epidemiology could act as a bridge between clinical and 'preventive' medicine. It was, he said, 'the only way of asking some questions', 'one way of asking others (and no way at all to ask many) (p. 96)'.¹ Epidemiology was a method: a systematic set of procedures for examining this perplexing dual role of human bodies as both biological machines and social subjects. Thus, epidemiology had to be the main method of social–medical study.

Uses of Epidemiology, whose main arguments were summarized in a paper published in the *British Medical Journal* 2 years earlier (reprinted in this volume),² represented the flowering of a substantial and visionary post-war social medicine project.³ Morris was among many star figures in this project. These were

the years which saw the founding of the Committee for the Study of Social Medicine (1939),⁴ the Oxford Institute for Social Medicine (1942), the Social and Preventive Medicine Committee (1942), the MRC's Social Medicine Research Unit (1948) and the Keppel Club (1953).⁵ In all these enterprises, groups of clinicians, public health doctors, sociologists and policy analysts got together to discuss and research the influences which necessarily lie beyond the domain of the individual doctor–patient encounter—the contribution of social and economic factors to patterns of health, illness and death.

The intellectual climate in which *Uses of Epidemiology* was gestated and born was also that of the brave new world of the new National Health Service. The promise of health services for all uncovered the reality of persisting material inequalities that would inevitably dilute the health-promoting potential of the new service. Another impetus for a new approach to understanding the social determinants of differences in bodily behaviour was a direct legacy of the war: eugenic explanations, a strong ideological current in Britain, could never recover from their association with National Socialism, which added weight to the need for a newly robust science of environmental influences.⁶

My copy of *Uses of Epidemiology* was inscribed by Morris to my father, Richard Titmuss, with whom he had a long collaboration in the field of social medicine. Theirs was an ambitious and imaginative enterprise, part of the larger social medicine project, a true collaboration between doctoring, public health medicine and hard-hitting social analysis. *Uses of Epidemiology* draws on the research Morris and Titmuss did which produced three classic papers on juvenile rheumatism,⁷ rheumatic heart disease⁸ and peptic ulcer.⁹ Most of the work for these was